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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/881,948	06/25/97	STRASS	P TRO02/401P/2

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EXAMINER
MCDONALD,R

ART UNIT	PAPER NUMBER
1109	

DATE MAILED: 12/19/97

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/881,984	Strauss et al.
Examiner	**Group Art Unit**
Rodney McDonald	1109

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 9-13 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 9-13 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zejda (U.S. Pat. 5,112,467) in view of Fujitsu LTD (Japan 59-179784), Hitachi (Japan 59-170269) and Inoue (U.S. Pat. 5,244,556).

Zejda teach a cathode sputtering apparatus provided with a quick disconnect mechanism for rapid replacement of a target. (See Abstract)

In Fig. 1 there is illustrated an upper portion 19 of a cathode chamber on which is received an annular target unit. As illustrated, the target unit comprises a target 1 and a target base plate 2, the base plate 2 serving as a target holder. (Column 2 lines 59-65)

The target 1 and base plate 2 are secured together by means of screw bolts 14. The upper portion 19 essentially comprises the cover of the cathode chamber. (Column 2 lines 66-68)

The differences between Zejda and the present claims is that the target comprising a generally disk shaped section having two generally planar surfaces and a cylindrical outer periphery manufactured of sputtering material is not discussed, the target being exposed on one side to vacuum while the other side is not exposed to vacuum is not discussed and where the target is made of refractory metals, gold, aluminum or an oxide of aluminum is not discussed.

Fujitsu teach in a sputtering device for forming thin film on a substrate by applying direct current of high voltage on the target in a magnetron, the target is attached to a water cooling backing plate by screws with a metal sheet between them. (See abstract)

In Figure 2, the target 11 has a generally disk shaped surface having two planar surfaces and a cylindrical outer periphery manufactured of sputtering material. (See Figure 2)

The motivation for providing a target having two planar surfaces and a cylindrical outer periphery manufactured of sputtering material attached by screws is that it is desired to prevent the target from separating from the support when heated. (See Abstract)

Hitachi teach a target is to be attached to sputtering machine for forming film on the base plate placed in a vacuum chamber. It comprises (a) backing plate cooled with water and (b) heat

transmitting medium placed between the backing plate and the target and made of metal softer than both of them. They are put together detachably from each other. (See Abstract)

As a heat transmitting medium of soft metal is placed between the target and the backing plate, they can be fixed to each other perfectly with bolts. The target is efficiently cooled. Only the target need be replaced. (See Abstract)

Figures 3 and 5 show that target being affixed with bolts. (See Figures 3 and 5)

The motivation for utilizing bolts to attach a target to a backing plate is that it is desired to efficiently cool a target. (See Abstract)

Inoue teach in Fig. 2 an example of target in which solder, a brazing filler metal having a low melting point is not used. Referring to Fig. 2, the target plate 31 is directly mounted on the flange 3a of the support frame 3b by respective screws 17a and 17b via the sealing member 4 (the O-ring). Thus, the target plate 31 is directly cooled by cooling water (the heat exchanging medium). (Column 2 lines 31-37)

Inoue also suggest that target materials for a target can be aluminum, one of the metals titanium, zirconium, tungsten, molybdenum, gold, tantalum, niobium, palladium, manganese, silver, zinc, ruthenium, and tellurium, an alloy in which at least one of the above metals is the chief ingredient, chromium, nickel, a chromium alloy, a nickel alloy, magnetic metals such as permalloy, a silicon alloy of one of the metals titanium, tungsten and molybdenum, silicon, and an oxide of any of the above materials. (Column 7 lines 62-68; Column 8 lines 1-5)

The motivation for exposing one side of the target to vacuum pressure and the other side not being exposed to vacuum pressure is that it is desired to directly cool the target. (Column 2 lines 31-37)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a target with threaded holes in order that screws engage the threaded holes to support the target against a plate as suggested by Zejda, to have provided a target with a generally disk-shaped section having two generally planar surfaces and a cylindrical outer periphery, manufactured of sputtering material and supported by bolts as taught by Fujitsu, to have provided a target with a generally disk-shaped section having two generally planar surfaces and a cylindrical outer periphery, manufactured of sputtering material as taught by Hitachi and to have provided a target with a generally disk-shaped section having two generally planar surfaces and a cylindrical outer periphery, manufactured of sputtering material with one surface being exposed to vacuum with another not exposed to vacuum and made of various materials such as Ti, Al and Au as taught by Inoue because it is desired to efficiently and directly cool the target.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney McDonald whose telephone number is (703) 308-3807.

R. BRUCE BRENEMAN
Supervisory Patent Examiner
Art Unit 1109

RM

December 15, 1997